medical journal

university of toronto

february 1977

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medical journal
university of toronto

Established December 1923
An Undergraduate Publication

VOLUME LIV
NUMBER 3

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THE COVER: *Reminiscent of the pictograms signifying the sports of the XXI Olympiad, our cover man-for-all-seasons depicts people in motion, in keeping with this issue's feature topic—physical fitness and sports medicine.*

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1) All articles intended for publication should be submitted to the editors before the deadline which is usually *six* weeks before the release of the Journal.
2) Submitted articles should be typed (or legibly printed) double-spaced; single-sided on paper 8½" x 11" (letter size) and they should not be more than 15 to 20 pages (3000 to 4000 words)
3) Illustrations, graphs, diagrams, figures and photographs should be put on a separate sheet and identified by Arabic numerals. A list of explanatory legends for all the figures and diagrams should be put on another sheet. Do not write on the back of photographs.
4) References should be checked with the original sources, designated by Arabic numerals in the text, numbered in order of appearance and put on a separate sheet. Each periodical reference should include in order: the author's name and initials, title of the article, Journal name, volume number, page number and year. (e.g., 1. ROSEN HJ: Lumbar invertebral disc surgery: review of 300 cases. *Can. Med Assoc J., 101: 317, 1969.)*
5) The editors reserve the right to make such editorial changes as are deemed necessary to ensure correctness of grammar and spelling, clarification of statements and conformity to Journal style.
6) Acceptance for publication is subject to the understanding that such material is submitted solely to the Journal, and will not be reprinted without the consent of both the editors and author.

174-0727 (6)

Fitness: at the Provincial Level

In November, 1976 we invited Significant Canadians Marc Lalonde (Minister of Health for Canada), Frank Miller (former Minister of Health for Ontario), and Bette Stephenson (Minister of Labor for Ontario) to submit their opinions on the relative physical fitness of today's Canadian as compared to the average Canadian of 100 years ago, and the role Government has played, and will play, in relation to the general fitness levels of the populace. Iona Campagnolo (Federal Minister of State for Fitness and Amateur Sport) kindly agreed to answer in place of Marc Lalonde but we still hadn't received her submission at press time. Robert Welch, (Minister of Culture and Recreation for Ontario) kindly agreed to answer in place of Frank Miller. (Bette Stephenson was regrettably too busy pushing through some new legislation to submit a statement.) Still, we are pleased to present the following viewpoint, and wish to thank Mr. Welch for his time and interest.

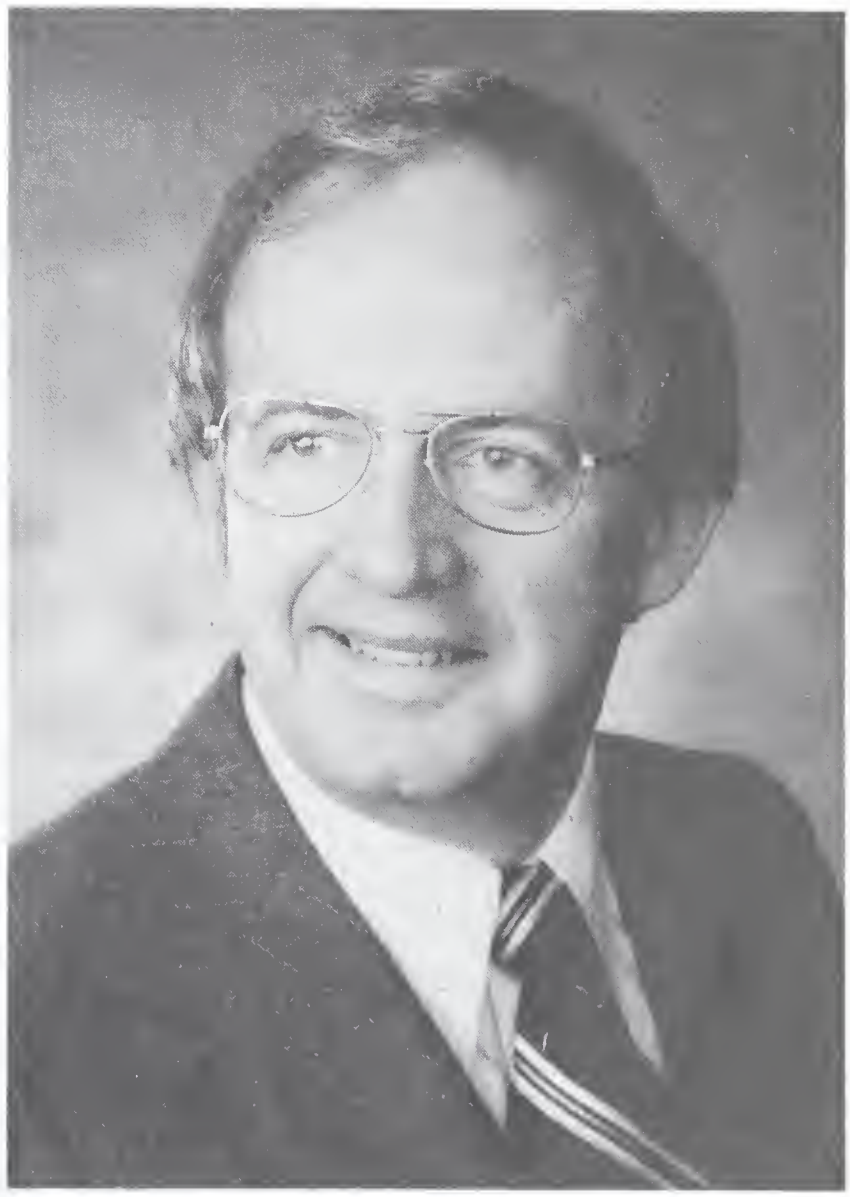
The state of physical fitness in the past 100 years has decreased dramatically and consistently with the increase in "leisure time" and labour-saving devices. The automobile has almost replaced walking as a means of getting from one location to another. High rise office buildings and elevators further decrease the opportunity for physical activity. Tasks, which at one time required manual labour, are now accomplished by sophisticated machines and computers, resulting in decreased opportunity for some of us to maintain a level of fitness through normal employment.

These and other trends indicate that a change in life style, and a commitment on the part of all of our citizens to maintain a healthy active life is necessary. In recent years we have seen a renewed interest in some activities such as cross-country skiing, tennis, and jogging. As the Minister of Culture and Recreation, I hope that many more citizens will take part in a variety of such activities.

In the past decade, several studies have begun to show a positive relationship between increased activity, physical fitness, and the general level of public health, and while many of these studies are inconclusive, it is our belief that many individuals would benefit greatly through increased participation in sports and recreation activities.

The Ministry of Culture and Recreation has taken steps recently to promote increased services on the part of provincial sports associations. In addition, through Wintario, funding for fitness programs is available on a shared cost basis. Workshops, seminars, training courses, community based programs, and employee fitness programs, designed to increase the fitness level of participants, are eligible for assistance. The government, through this and other types of assistance, is prepared, in co-operation with other agencies, to stimulate Ontarians to become more active and more fit, believing that fitness will enhance personal productivity and happiness.

Ministry of Culture and Recreation
January 24, 1977



Honourable Robert Welch
Minister of Culture and Recreation
MPP for Brock

and Federally. . . .

Operation Lifestyle

Mission Vraie-Vie

Operation Lifestyle is an ongoing public education campaign developed by the Department of National Health and Welfare to encourage Canadians to preserve their health through improved lifestyle habits. It stems from "A New Perspective on the Health of Canadians", a document introduced by National Health and Welfare Minister Marc Lalonde in 1974, which stated that many of the causes of sickness and death were "self-imposed"—that is, these causes were rooted in individual decisions and habits dangerous to health.

Operation Lifestyle means to encourage Canadians to benefit from an improved health lifestyle pattern—to give closer attention to their personal habits with respect to alcohol, smoking, fitness, nutrition, drugs, safety and disease prevention in general.

While of government origination, Operation Lifestyle is being actively conducted in close collaboration with the private sector, the health professions and a number of voluntary agencies within the general public. Elements in the campaign include the development and dissemination of motivational materials to the general public together with appropriate actions to encourage Canadians to better their own health lifestyle.

Components of Operation Lifestyle introduced to date include the Fit Kit, Dialogue on Drinking, an insert program which includes the items "Your Lifestyle Profile" and "Ways to Improve Your Lifestyle Profile", and the Operation Lifestyle Award.

In many local communities, there are individuals who volunteer their time and talents to improve the lifestyle of their fellow citizens. These are the people who have worked for many years, often unrecognized, to expand community services and raise the level of health awareness in their areas.

The Dept. of National Health and Welfare feels that these people should receive the recognition they deserve. To this end, the Lifestyle Award has been created to acknowledge the invaluable contributions made by these Canadians in the promotion of positive health lifestyle. It is hoped that those people honoured by the Award will be encouraged to continue and expand their efforts towards improving the community health lifestyle. It is hoped, also, that the example set by the Award winners will provide the incentive for other capable Canadians to become involved and volunteer their much needed services to change and better the lifestyle of their communities.

Nomination forms and further advice are available from the Secretary, Lifestyle Awards Committee, Room 560, Brooke Claxton Bldg., Ottawa K1A 0K9..

The Lifestyle symbol has been designed to identify various components of the total Operation Lifestyle campaign as well as promotional and educational items produced in support of the Operation Lifestyle concept.

The ankh is the basis of the symbol. Having its foundations in ancient Egypt, it was, in fact, in existence some 5,000 years ago and is properly referred to as the "Key of Life".

While the Lifestyle symbol is the property of the Dept. of National Health and Welfare, its use will be offered free of charge to business, industry, governments, and organizations having a vested interest in the promotion of a positive health lifestyle.

Further information on Operation Lifestyle and elements of the program may be obtained from the Information Directorate, Department of National Health and Welfare, Ottawa, K1A 0K9 (Area 613-996-4950). ■

Interview: David Hastings

by Susan Ross and David Arnold

Dr. David Hastings is an Assistant Professor of Surgery in the Division of Orthopaedics. His special interests are in the field of surgery of rheumatoid arthritis and sports medicine. In the latter area, he has been the orthopaedic surgeon for the Toronto Maple Leaf Hockey Team. He is the author of several papers on the subject of Sports Medicine and has delivered multiple scientific presentations throughout North America and Europe.

He holds an M.D. from the University of British Columbia. His post-graduate training in surgery was done at the University of Toronto following which he was a McLaughlin Fellow in Europe for one year. He became a Fellow of the Royal College of Physicians and Surgeons of Canada in 1963. In addition to his interests in hockey, Dr. Hastings is a soccer fan and an avid skier. He is married with four children.

Journal: Well, I guess I should get right to the heart of it and ask you what constitutes sports medicine.

Hastings: Wow! That's a very, very tough question. I think that you could approach sports medicine in two, or possibly, three different spheres. There's the doctor like myself who is interested in sports medicine who is injury orientated, and we treat primarily the injured athlete. There are doctors who are keenly interested in sports medicine from the point of view of conditioning and physiology, and they are interested primarily in training of athletes rather than treatment of injuries. And then I think there's a third group who are interested in the investigation of fitness, and then applying it to sports medicine. I think those are the three categories of doctors who get involved in sports medicine.

Journal: Would you say that those three categories are represented in the CASM? (Canadian Academy of Sports Medicine)

"... Riverdale Collegiate was sending all their football players to the local chiropractor ..."

Hastings: Oh yes. I think it tends to be maybe a little orientated towards injury, moreso than to physiology, but there are a moderate number of physiologists. There's the Canadian Association of Sports Sciences, on the other hand, which is loaded very much more on the physiological side, and with paramedical personnel, such as physical educationists, kinesiologists, and respiratory physiologists.

Journal: Do you think they'll ever merge?

Hastings: Well, we are having some joint discussions, in that we're both copartners in FIMS, which is the Fédération Internationale de médicine sportive. We're joint members. We don't have joint meetings largely because CASM feels it should be medically centered rather than paramedically centered.

Journal: What exactly is your connection with CASM?

Hastings: Well, at the present time I'm a member only and I have in the past been a director, which is just an officer who is willing to sit on the board and help in decision making and policy planning.

Journal: I'm wondering, and probably a lot of other people will be wondering when they're reading this, how did you get involved in this in the first place?

Hastings: Ha! How do you get involved in the first place ... I think number one, that you have to be interested in sports. I think that's the first criterion. You don't get involved, at least at the treatment level, unless you're interested in athletes and athletics, and probably if you've played some athletics yourself. And secondly, you have to have an opportunity and I was offered the job of looking after the Toronto Maple Leafs, which was a golden opportunity. That's in essence how I got into it.

Journal: How long ago was that?

Hastings: About seven years ago.

Journal: What does being a team doctor for the Maple Leafs entail?

Hastings: Well, mostly time, and a fair amount of treatment of injured athletes. The time commitment is two games a week during the regular season which runs from October through until April. It involves a very hectic training camp, where we have to examine around 80 to 90 athletes. And it involves the treatment of the injuries that occur during that training camp and during the season. Its a fairly demanding time schedule. If we make the playoffs, which we do but we don't last very long, it means travelling with the team to the various cities where the playoffs are being held.

Journal: How many team doctors do they have?

Hastings: Right now we have three, and then consultants on top of the team doctors. We have a pretty good system. We have a physician who looks after common garden variety colds, flu epidemics, gonorrhea, and so on. That's a pretty major part of most professional athletics. And then we have a plastic surgeon who looks after the facial injuries and does all the suturing. That's fine because I don't like to sew people up. And then there's the orthopedic surgeon. I think that certainly the clinician and the orthopedic surgeon are essential. We have consultants in ear, nose, and throat, and eye, and in dentistry. And its very handy. When Mike Palmateer had a stick in his eye last Saturday night I was there to phone up our eye consultant, who met him at the Wellesley Hospital. Mike had a slit lamp examination within only 20 minutes of having been hit in the eye. He had an examination of his anterior chamber, and you know,

"I think we (Toronto Maple Leafs) probably have the best medical system in the league."

he's able to get proper treatment. Yet if that back-up wasn't available he might have gone on to Philadelphia not knowing he had an anterior chamber hemorrhage. He might have gone on and rebled, which is apparently a pretty common complication of that injury. So it's nice to have that back-up.

Journal: Do you know if all teams have such coverage?

Hastings: I think we probably have the best medical system in the league as far as I know. I think it's partly our system in Canada. Most of it is non-paid remuneration. I mean, I get a retainer but its not a large retainer, and two of the other doctors get retainers, and our consultants really just get tickets to the games, you know, as their retainers. And we do it, as I said, more because of our interest in athletes and athletics.

Journal: Do you find that with all the fighting and roughing that goes on in the games that the demands upon the doctors of these teams are increasing? Are there really more injuries coming in, for whatever reason?

Hastings: I don't think there're more injuries. I've done an injury survey in the province of Ontario for minor hockey, that'd be for ages 15 to 21, in the years '73 to '75. I've also tended to document our team injuries as we go along. No, there's no significant increase, and the injuries we do get are not really related particularly to the violence in hockey. In other words, when we add up the injuries in the league, there were 542 injuries—only 3% of all those injuries were due to fighting. Forty-two per cent were caused by high sticking. That, you may say, is a form of fighting. Certainly it precipitates fighting, but high sticking is found to be the major cause of injuries in the NHL.

Journal: Now that we're talking about injuries, we were interested in the long-term effects of injuries incurred by fairly young players of contact games, whether its football, or hockey, or basketball. What happens to them 15 years later, after they've had some ligament damage or cartilage damage? How many would really, or do, suffer from long-term arthritis and that kind of thing? Or how much of that is an unwarranted fear?

Hastings: No, I don't think its an unwarranted fear at all. But we don't have any operable statistics on that, or very valid statistics on delayed effects of athletic injuries. Certainly, no doubt you see it, but I don't think its a major thing. There's no way I can put a percentage on it but, you know, we've got a lot of publicity now because Bobby Orr's got osteo-arthritis of his knee.

Journal: Is he an atypical case?

Hastings: No, he's not atypical, but I don't think that he represents the majority of athletes. You know, he's only 27 years old. I mean that's hardly later life. I don't see a lot of old athletes wandering in here at age 50 with arthritis, and I have a very large athletic clientele because of my interest, the fact I'm fairly well known in sports medicine circles. A lot of the people in the coaching and managerial areas know me and recommend their friends, but they're usually coming to me with the same things as everybody else in that age group is—sore backs, bunions, that sort of thing. They're not coming to me with the sequelae of athletic injuries. Sure, I can see two or three a month, but its not a staggering number. On the other hand, I agree with you that football, particularly American football, produces an awful lot of knee injuries in teenagers, to the extent that I think that its a game that should not be played, quite frankly.

Journal: Do you really think so?

Hastings: Yes, in high school, yes.

Journal: Is there something about young peoples' joints, teenagers' joints, which makes them more susceptible to serious injuries as opposed to an adult?

Hastings: No, I don't think so. I think its the fact that its not as well supervised, and they're probably not as well conditioned, and they don't have the first line treatment that a more senior league team does. I think it's a dumb sport. It costs too much money to outfit the kids to play, and what happens is rather than spend that money they get outfitted in inferior equipment. I'd rather see them play soccer, where all they need is a pair of boots and a field. They get in much better physical condition in the sport of soccer, but they don't get the same injuries.

". . . Fitness really is a personal thing. I don't buy mass innoculations of fitness, like a mass immunization program."

Journal: If I can follow along what you're saying, can CASM, or other people in sports medicine, in any way influence educators to alter their sports programs, fitness programs?

Hastings: We've tried to put pressure on. We try to do some things as a sort of pressure lobbying group. For example, we've tried to make phys-ed, in particular the type of cardio-vascular fitness type of physical education, not an optional thing by the time you get to grade nine. I mean, I think its ridiculous that a child of fourteen, ought not to take physical education. You know, I think it should be mandatory right through, and I think it should be part of the school curriculum. Fitness should be part of a way of life.

The other thing that we've done is that we've found to our horror that a

good many high schools have no doctor that they can refer their athletes to. For example, Riverdale Collegiate was sending all their football players to the local chiropracter because he was the only one that was interested in their athletes. So we've initiated a program through the province of Ontario, through the OMA sections of sport medicine, of trying to match a regional doctor or two with every school so that if somebody gets injured in a football game they can immediately pick up the phone and call a concerned doctor who has a little knowledge in that area, who won't say come and see me in three weeks next Tuesday, but who will say come on over right now and I'll look at you. Yes, its a very important thing I think.

Journal: Do you think family doctors on the whole are being properly trained in med. school to deal with this sort of injury?

Hastings: We're trying awfully hard in our musculo-skeletal quarter to introduce sports medicine and ligamentous injury complex in a series of lectures. Its very hard for anybody to make the diagnosis of a torn knee ligament injury. But I think if you have a proper education you have a fighting chance at it. At the present time the diagnostic accuracy of the average emergency department is about 20%, and that means about 80% of them are missed, which is a fairly shocking statistic. But I happen to know because I see most of them sort of hobbling back to my office three or four days later.

Journal: So would you say that more emphasis on that sort of skill, of diagnosing, in med. school, would consequently improve on that statistic?

Hastings: Oh yes. The simplest way of doing that is to just take a history, and that's what's never done. I mean all it takes is a history. Consider the average patient who "sprains" his knee. The patient comes to the emergency department, and the guys in the office will say "Well how did you hurt your knee?" and he'll say, "Well I hurt my knee playing football", so the guys in the office will say "Hurt knee playing football" and that constitutes the history, and that's pretty useless information. Armed with that history, they then send him down for an X-ray, which is invariably normal because he's probably injured his ligaments. Its only about one in a thousand that's actually fractured it. Occasionally they'll get the one who did actually fracture something and they'll forget to take an X-ray! In one patient I saw it was missed for eight months! Anyhow, our patient will come back with a normal X-ray, and he'll get a tensor bandage and be sent home.

Most of these serious knee injuries don't really look like very much. They don't complain. While if they have a minor knee injury, with a minor sprain, it hurts like hell . . . they really howl. The knee often becomes swollen, and these people come into emergency and howl. If you completely disrupt your knee it usually doesn't hurt you very much. It may not sound logical, but in point of fact it is quite logical, because if you completely disrupt your knee ligaments you produce a fairly widespread neurapraxia, number one. Number two, you don't build up an effusion in your knee joint because you've torn your capsule so you have nothing to keep the fluid in the knee joint. Therefore you don't develop the pressure and the tension which is the primary cause of pain in an injured knee. . . . A case in point would be Ian Turnbull when he tore his median collaterol and posterior cruciate ligament. He decided then, after I told him he was going to have it operated on, to go over to the local pub for a few beer and some supper, and then come back into hospital. By the time my resident examined him four hours later, Ian didn't feel there was anything wrong with his knee, although he *knew* he had a torn median

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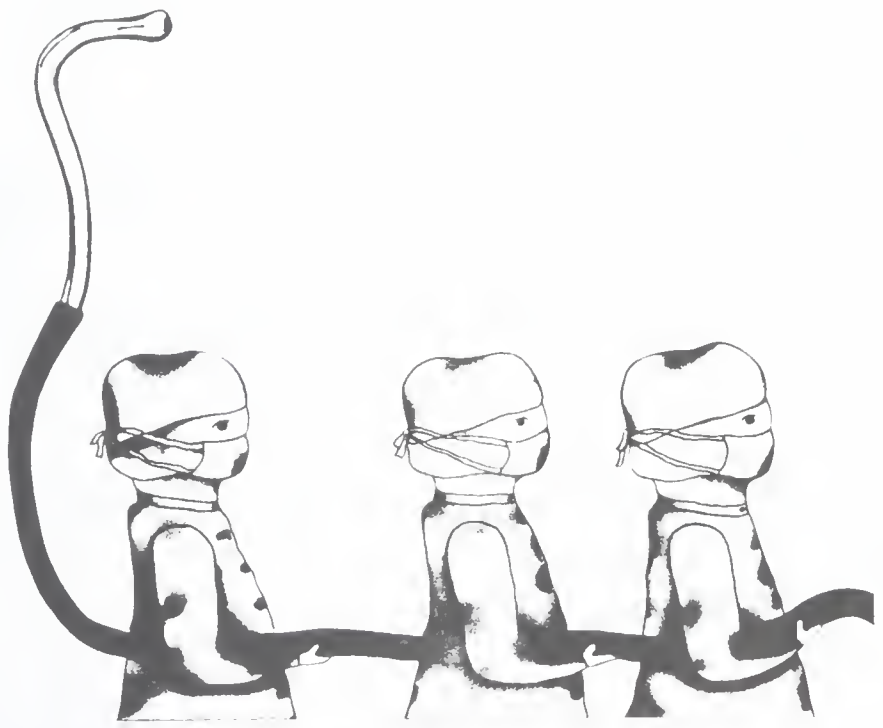

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You're going to be out a minimum of three months with an injury like that. So they're hard to recognize, but if, on the other hand, you take a history that somebody has been hit in a way appropriate to injure the knee and that they can't continue skating, or running, then you suspect that patient has got a serious knee injury. And you have to prove he doesn't—it's not up to the patient to prove he does. He'll prove it about six months later when he can't jog, or play tennis, or squash, or things like that. But you don't want to wait until then, you want to diagnose it right away and treat it properly.

Journal: There was one other thing I wanted to ask you about. We had the coach of the Toronto Varsity Blues come and speak to us, and he, along with Dr. Goode of our physiology department, was telling us about what horrible physical shape the Pittsburgh Penguins were in. And I thought it rather shocking that their VO_2's were often below normal. They're basically just strong men, not athletes. I was wondering if you would agree with that as the general situation?

Hastings: In hockey players?

Journal: Yes.

Hastings: You have to consider each particular sport when deciding whether it generates cardio-respiratory fitness. I don't think hockey generates the same kind of cardio-respiratory fitness that, say, soccer does, or cycling, or swimming, or distance track events . . . I think all those people are fitter in the cardio-respiratory sense. But as far as motor, muscle development goes, I think that hockey players might have more, well, obviously would have more than distance runners, and probably also soccer players. Now, by the same token, if you started looking at the fitness of shot putters, discus throwers, javelin throwers, weight lifters, in their cardio-respiratory VO_2 max. measurement, you'd probably find that they weren't all that fit either. I think it depends on what you're trained to do. Hockey players are not trained for endurance, they're trained for short bursts. So their training isn't really geared to produce cardio-respiratory fitness. On the other hand, you have some hockey players who are good athletes, who go out and train for their hockey season by running. You get guys like Inge Hammerstrom, and Darryl Sittler and, oddly enough, Jim McKenny reporting to training camp with VO_2 max.'s that are way up above average.

Journal: I don't get the significance of the "oddly enough, Jim McKenny".

(He gets a lot of bad press, that's all.)

Hastings: Yes, that's it.

Journal: For what?

Hastings: Well, he looks lethargic. I think that's the problem, and he just doesn't have the sort of grace or timing that some of the other players have. But, in point of fact, he happens to be one of our better conditioned athletes. We really put them all through fitness testing at the start of training camp. We put them on the exercycle, the bicycle ergometer, and we measure their oxygen uptake, and monitor them with cardiograms and so on. So we fitness test them all at the start of the season.

Journal: And you find them generally fit?

Hastings: Its fair to say that our team puts more emphasis on fitness than a lot of other teams. Because I'm interested in fitness, we have got the coach and the manager interested in fitness, which in turn has got the athletes (interested). So the Leafs are a much fitter team now, say, than they were five or six years ago. They're reporting to training camp in much better shape. And as it gets harder to make a dollar in hockey, as its going to get harder, they'll be fitter and fitter!

Journal: Do you think that there'll be a really large growth in scientific knowledge about what makes people fit, how to get fit, and the benefits of fitness? There seems to be a lot of mythology floating around these days.

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Hastings: Yes, well, that's so. But, I don't know if there's any real guarantee that being fit is going to increase your life span, either. I don't think there's a lot of statistical significance to say that the average Swede may, at 65, be fitter than the average Canadian at 30. Their life expectancy in Sweden is really not all that much greater than you see in Canada. So I don't know if you can equate fitness with longevity. I think you can equate fitness, to some degree, with your ability to carry out recreational pleasures for longer in life, and I think that fitness really is a personal thing. I don't really buy mass innoculations of fitness, like a mass immunization program. I think fitness should be pointed out, what the advantages of it are, namely, that you can engage in athletic endeavors longer in life. For example, my particular interest happens to be helicopter skiing, and you know, that'll keep you fit because there's no way you can go out for a week in the Bugaboos unless you've run 15 to 20 miles a week for six weeks before you go. Really, you just can't keep up the pace. So I'm starting about now to run 15 to 20 miles a week, in my spare time.

Journal: When you have it!

Hastings: Yes . . . I have it at six in the morning or I have it at nine at night. I work it in.

Journal: Are all orthopedic men generally so busy? I mean, you seem to have a very full timetable.

Hastings: I think our average work week—I was just looking at some statistics on that today—is in excess of 60 hours. Mine would be in excess of 70, and that doesn't really count reading at home. It really counts from the time I leave the house to the time I get back to it, and seldom would I be back in the house—I leave the house before seven every morning—before eight at night. That's just the way I choose to live.

Journal: We were discussing the Globe and Mail article (re: doctors who billed OHIP over $100,000) while we were waiting downstairs . . .

Hastings: I made the list!

Journal: How do you feel about that? Perhaps this isn't the time to ask you.

Hastings: Oh no, I think its a reasonable thing to ask. I think that sort of thing is stupid because it doesn't reflect many things. It doesn't reflect the fact that many of those people, especially the ones that are higher earners, are employing 20 technicians and paying them out of that. It doesn't reflect the overhead that you're working with. I can look at those statistics and I can go "Cluck, cluck" because I know there's somebody who's sitting in an office the University pays for who has made that list, and I know that he's taking it all home. While I know that I have to pay about $40,000 a year in overhead just to pay my two secretaries and run this office. So the fact that I barely scraped onto the list means that my takehome pay isn't all that, you know, isn't all that terrible. And I know how hard I work for it, and I know that any executive working as hard as I do would be better paid. So I don't feel too badly about it.

Journal: We were hoping someone would say that! Doctors seem to be so apologetic, and there's no real reason to be.

Hastings: No, not at all. No, I don't think there's a need to be defensive about it at all. ■

Shoulder Separations and Dislocations

K. R. Melvin 7T7 and Hamilton Hall M.D.

Abstract

In the two year period 1974-75 at two major downtown Toronto hospitals, Toronto General Hospital and Mount Sinai Hospital, there were 49 admissions due to either dislocated shoulders or separations of the acromioclavicular joint. 79.6% of these were operated upon for repair and in only 5% of cases did the surgery fail to correct the problem. The etiology of these two conditions will be discussed and illustrated.

Illustration

Case 1.

A 29 year old white male presented to the Emergency department complaining of a 'painful shoulder'. While playing hockey that evening he was 'checked into the boards' and struck his shoulder directly. He felt immediate pain over the superior aspect of his shoulder but could still move his arm. He came directly to the hospital.

Case 2.

A 21 year old white male presented to the Emergency department brought in by friends after injuring his right shoulder playing football. He was tackled and fell forward onto his face with his opponent still grasping his arm. He felt a sharp pain and with his arm at his side could not move it without severe pain. He came directly to the hospital.

These two case histories are fairly typical for patients presenting with

acute shoulder injuries. They are both first injuries for the patients and are important in that they are particularly prone to further injury and development of a chronic problem if not treated properly after the initial injury. After having ruled out fracture of the bones by X-rays there are some common soft-tissue injuries in this area which should be considered. This paper will deal briefly with two of the most common ones—the 'separated shoulder' which is an injury to the acromioclavicular joint and the subluxation-dislocations of the shoulder which involve the glenohumeral joint.

The Acromioclavicular Joint

The acromioclavicular (AC) joint has a thin joint capsule surrounding its two articular surfaces and a very complex arrangement of ligaments which provide it with its stability and account for the great force required to disrupt it. Its strength lies in its tough superior ligament and, although the joint is well designed to protect against distraction by horizontal force, it is not as strong with respect to protection against upward displacement. The usual injury to the AC joint is usually caused by a direct blow, such as in sports injuries, motor vehicle accidents, etc., and the force usually drives the scapula and clavicle downward until the clavicle is levered against the first rib and when being forced back upward separates at the AC joint. There are a variety of degrees of injury, best classified into *three* grades:

Grade I injuries usually stretch the capsule with or without tearing, and are associated with mild pain, some local tenderness and may show a subperiosteal calcification reaction a few weeks after injury on X-ray. It is usually treated with ice in the first 24 hours, then a sling and heat to the area, and heals without sequelae in about 10 to 14 days.

Grade II injuries are caused by a greater degree of stress rupture of the capsule, and tear the AC ligaments as well as usually the coracoclavicular ligament, which also helps protect against upward displacement of the clavicle. There is significant pain, tenderness and swelling aggravation of pain by motion of the shoulder. The clavicle can be seen to ride higher than the acromion by about the width of its bony end and may be further displaced by stress testing with weights. The injury is usually treated closed by external sling support in a 'Kenny-Howard Sling and Halter', which basically holds the clavicle down and elevates the acromion, usually for six weeks.

Normal Shoulder

Grade III injuries caused by severe violent injury, cause the same damage as Grade II injuries and also tear insertions of the deltoid and trapezius muscles. The clavicle may be riding freely, high and displaced from the acromion. There is usually severe pain acutely and treatment is usually by threading wires to realign the AC joint, which wires remain for six to eight weeks. Any tears in the deltoid and trapezius muscles are also repaired. The coracoclavicular ligament, which is also commonly torn, is not fixed. An alternative surgical procedure to improve stability is to transfer the tip of the coracoid process, with coracobrachialis muscles and short head of biceps, and attach it to the clavicle. The point is put into a sling for six to eight weeks with no abduction of the shoulder allowed.

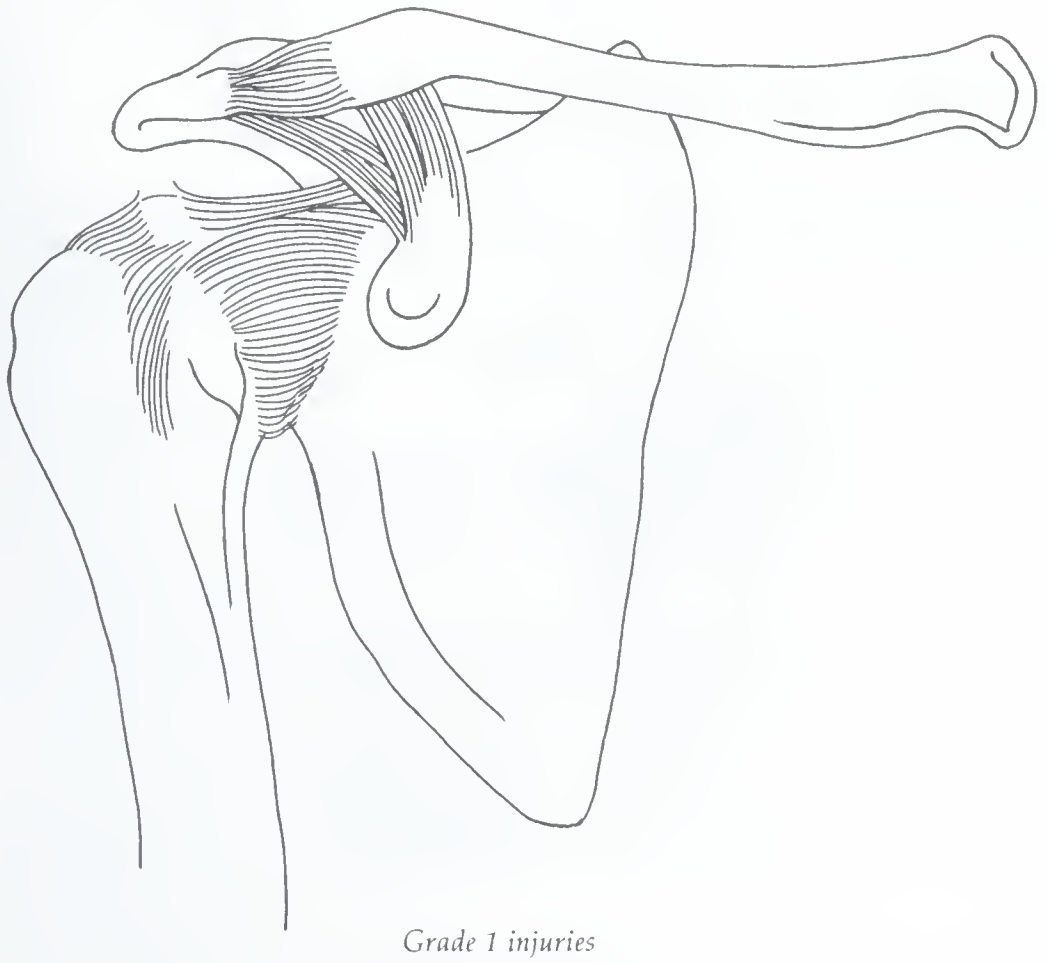
The commonest sequelae in this injury are a recurrence of the injury after repeat trauma, as in an athlete, or predisposition, due to laxity and subluxation of inadequately treated Grade I and II injuries. The other common problem is pain due to the development of osteoarthritis in the joint brought about by premature degenerative change. This may have to be treated by surgical excision of the ends of the acromion and clavicle.

Untreated Grade I injuries do not present much trouble after two or three weeks, and are usually considered healed. Grade II injuries may continue to have pain or progression to Grade III injury if re-injury occurs. Grade III injuries *may* not have pain if untreated, but may have weakness and discomfort in the shoulder girdle caused by the absence of the stability of the joint. These chronic problems present usually because of either pain or cosmetic deformity, the latter being commoner. Surgery may then be indicated. However, the cosmetic deformity is not a bad one, and older people or poor surgical risks should be urged to accept it.

The Glenohumeral Joint

Moving to the shoulder's glenohumeral joint, one finds a similar picture in that the main protective and stabilizing structures are the ligaments and muscles, which may be damaged by direct injury, due to the exposed position of the joint. In fact, dislocation of this joint occurs more commonly than any other in the body. Due to its configuration, it most commonly dislocates anteriorly (99%), but may also occasionally dislocate posteriorly or inferiorly (1%). The mechanism for subluxation and dislocation are similar, the latter being a consequence of more violent injury in the same fashion.

Injuries may be classed as **Acute** or **Recurrent**. The **Acute injury** most commonly seen occurs when the arm is externally rotated and abducted, which movement thrusts the humeral head against the glenohumeral capsule ligaments using the rotator cuff tendinous



Grade 1 injuries

insertion, which has moved posteriorly by the external rotation as a lever. The anterior capsule may tear and the humeral head may slip forward and ride over the glenoid. Restoration of internal rotation and abduction may reverse this partial dislocation and the head may slip back. The tear in the capsule may however extend and the head may slip out through the defect. Muscle spasm and pain maintain it in this position giving rise to the acute dislocation. The head of the humerus may slip inferiorly and get caught under the glenoid and coracoid process, producing the inferio-medial dislocation. This also involves stretching of the rotator cuff muscles.

Treatment of this injury involves immobilizing the joint in a position to allow the ligaments to heal tightly so that the joint will not become lax and allow further subluxations or dislocations to occur. The point should be X-rayed to rule out fracture; neurovascular states should be checked and the injury should be relocated, if it dislocated, by means of gentle manipulation aided by drug induced relaxation with Valium or Demerol. This should be splinted and maintained for six weeks, at which time movement should be allowed.

Recurrent dislocations are inevitably due to either re-injury or a lesion of either bone or soft tissue, such as flat glenoid, defect in humeral head, or lax joint capsule or ligaments, caused by injury. Treatment of this is important in order to minimize degenerative change in the joint.

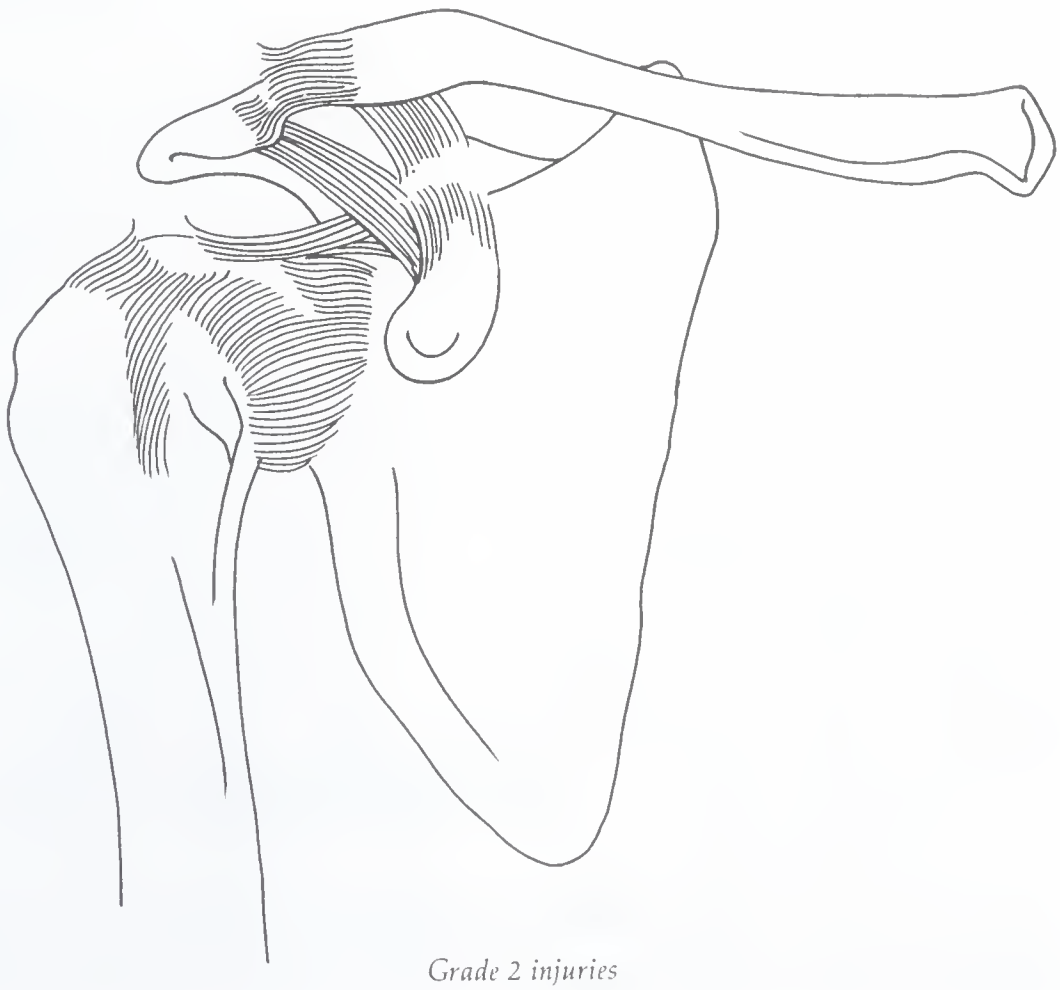
There are four principals of treatment in the surgical management of shoulder dislocation injuries. The first of these is repair of the anterior capsule of the shoulder joint. The second is a repair of the bone or soft tissue of the glenoid. The third is a restructuring of the humeral head in its alignment to the glenohumeral point by means of derotation osteotomy to the neck of the humerus. Finally one may do a combined repair involving the glenoid, humerus and soft tissues such as the biceps muscles to secure and stabilize the repair. Of these the commonest procedure in use is the first, involving plication of the anterior capsule of the joint. The Putti-Platt procedure is one of these.

It is common to surgically repair dislocated shoulders when they cannot be relocated closed acutely, or when they become recurrent, which usually is taken to mean more than two dislocations. Follow-up of these cases shows that at least 7% have a recurrence of the defect following surgery at some point in the future.

In this study there was only one recurrence of dislocation in the 49 cases, and this followed repair for a posterior dislocation, the cause being an athletic injury reproducing the defect.

Conclusions

The basic anatomy of the acromioclavicular joint and glenohumeral joint has been reviewed, and the gradations in severity of acquired injury have been outlined. It seems that there is a greater incidence of shoulder 'separations' than dislocations, i.e., more AC joints are injured than glenohumeral joints and more of them are operated upon, although this is not a result of this study, due to the fact that only hospital admissions are considered here, and many of the AC injuries seen in the

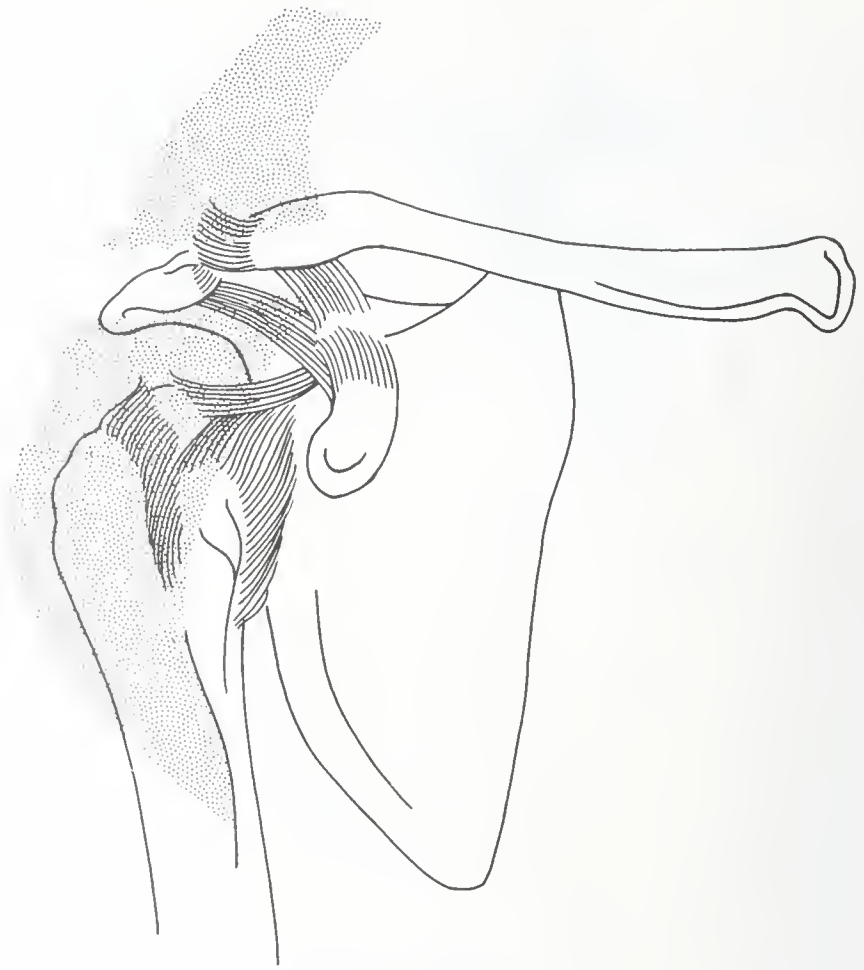


Grade 2 injuries

emergency are not admitted, as is also the case with reduced acute shoulder dislocations.

Thus, from the data presented here on the basis of admission to hospital, there is an approximately equal incidence of both injuries admitted for repair, but a much higher number of AC injuries (81.8%) present with acute injury than do acute shoulder dislocations (24%). It may also have been noticed that there is a significant (31.8%) incidence of complications of AC joint repairs, the way they are presently done, the commonest being recurrence of pain, recurrence of the cosmetic defect, and complications of surgery, i.e., wound infection. The recurrence of pain as described previously is due to degenerative arthritis, and in 3/22 cases required excision of the joint to alleviate the problem.

Thus it is seen that injuries to the shoulder are not uncommon, present in a variety of ways, and may be associated with persistence of the problem, recurrence of the injury, or complications which may interfere with return of pre-injury use of the joint.



Grade 3 injuries

Chart 1.

	No.	%	Presentation Acute	Chronic	Complication within 2 yrs.
A.C. joint injuries	22	44.9%	81.8%	18.2%	31.8%
Anterior Dislocation	25	51.0%	24.0%	76.0%	0
Posterior Dislocation (of glenohumeral joint)	2	4.1%	—	100%	50.0%
Total	49	100%			

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(Cont. from pg. 68)

Failure of OHP therapy in this case may be attributed to the chronicity of his condition, the use of OHP therapy so late in the treatment regimen, and duration of treatment for only three weeks. This was primarily due to patient pressures for an amputation.

In summary OHP therapy may be a useful adjunct to treatment for chronic osteomyelitis, especially if the osteomyelitis is of fairly short duration, and if OHP therapy is instituted early in the treatment regimen.

Acknowledgements: I would like to thank Miss J. Waring R.N., Dr. J. Kerr and Dr. A. Laws for assistance in the preparation of this article.

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Reflections on an SAR (Sexual Attitude Reassessment.)

In order to counsel and treat patients effectively in one's professional role it is first necessary to develop self-insight, to be consciously aware of one's own sexuality-attitudes, value-systems, and behaviors. So reads the introduction to our late Behavioral Science course in Human Sexuality.

A rather new and sophisticated technique in human sexuality training, the SAR (Sexual Attitude Reassessment) addresses itself to the above goal. Unfortunately, the SAR usually 'preaches to the converted' in that most physicians-in-training who could really stand to gain from a little SAR work are the last to admit it—and do it. SARs, first developed in the States, are now offered at dozens of American (and Canadian!) medical schools, and thousands have participated since their inception. According to follow-up data accrued by the National Sex Forum, 99 per cent of participants felt they'd benefited from the SAR—and all of them agreed that an SAR experience is an experience unlike all others.

So what *is* this experience like? Read on for a candid firsthand account.

9:30 p.m.

On a TTC bus northbound I sit alone, save the driver. Only slightly buzzed with beer, I wonder what exactly happened today. The beer plays no part in my befuddlement, I assure you. Rather, the events of the preceding afternoon and evening, in hindsight, leave me wondering—and exhausted. From 1:00 o'clock today I have been a player in a drama unrehearsed, and unfinished, for tomorrow we continue. It seems right that I should try to understand today before I begin tomorrow.

I went expecting a completely structured SAR workshop; i.e., a period of desensitization, followed by resensitization, and lastly, integration. But not so —at least, not immediately, apparently so. I went feeling anxious—the immediate dissolution of this anxiety once we began, laughing and expectant, gave me a false sense of security, for I found that queasy feeling regripping me now and again as the session progressed. 'We' means seven medical students (four women, three men—one man dropped out at the last minute. Cold feet?) plus our two 'leaders', B.S. professors relatively well versed in the field of human sexuality training, one male and, of course, one female.

We began by introducing ourselves and stating WHY we were there . . . what we expected to 'get out of it'. As it turned out, most of us were there for similar reasons; i.e., to achieve some clarification of our attitudes (Physician, know thyself), some in hopes of becoming 'better doctors' as a result, and of course unabashed curiosity. It was made clear that we would reap only what we sowed; no strict structure or heavy-handed direction was imposed upon us; we could take the session down any roads we wished.

We watched three standard movies put out by the National Sex Forum, an outgrowth of San Franscisco's Glide Memorial Church. "Sex and the Professional" highlighted a young medical student coming to grips with his sexual response to patients and co-workers. We relate to others intellectually, emotionally, and, yes, sexually. Denying the fact won't help a doctor, let alone his/her patient, and may even do the patient a disservice if such denial results in a frustrated, tense, or too aloof doctor. The movie made the point that to let one's sexuality interfere with a doctor-patient relationship shows a certain lack of self-mastery, and perhaps, of self-acceptance, and ultimately, self-knowledge.

The other two movies explicitly showed male and female masturbation, respectively. These may have been meant to desensitize us. As Dr. François Alouf, coordinator of the SAR at Northwestern University explains, the films enable participants to "get their fantasies out of the way and settle down to talk about sex. People have a lot of sexual curiosity that needs to be gratified. Yet once you've seen it, you've seen it."

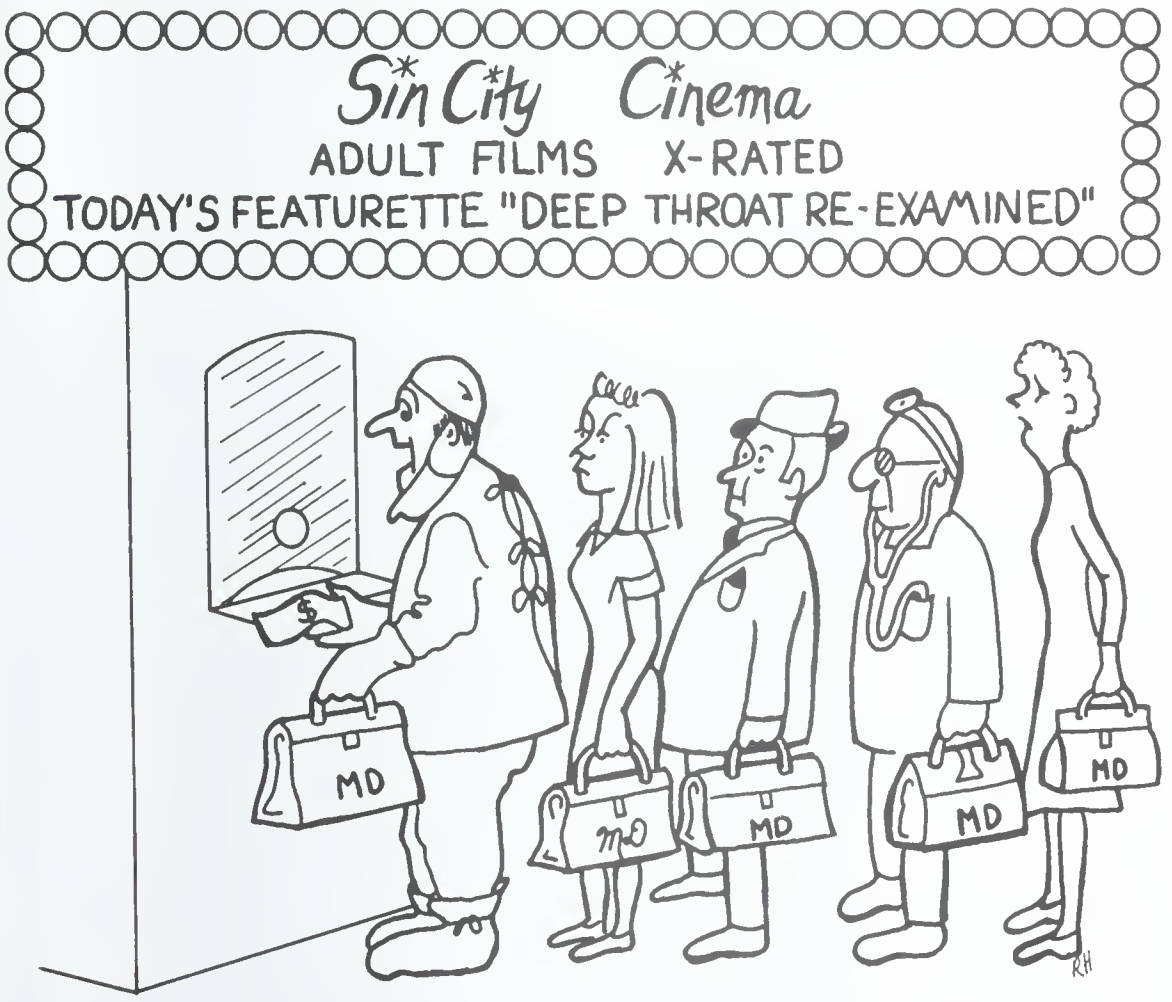
We discussed our varied reactions to the films, i.e., why we were aroused, if so; why we were alarmed, if so; why we were anxious, if so; why we were bored, if so, and so on. It was difficult to talk about one's innermost feelings with a group of relative strangers (the private heart goes to market, courtesy of social science—as one writer so pithily put it), but when someone would profer a bit of unmitigated feeling, it *was* appreciated by the others. The atmosphere invited public soul searching, which does tend to be more rigorous than private soul searching. Still, no one was 'raped' in any way; no one was pressed to do anything against his/her will—which paradoxically resulted in people being perhaps *more* willing to open up. I suppose the logic behind this method of teaching is simply that talking *does* help.

After a breather at dinnertime, we resumed. We each announced what in particular we would like to see worked out, put over the coals, hit the fan, whatever. The technique of role playing, as in our doctor-patient-relationships course, was used. Suddenly, sometimes painfully, one's hangups loom obvious . . . at nineish we called it quits.

9:30 a.m.

The downtown streets were deserted and silent. The city matched my mood as I approached our proposed meeting place. Unlike yesterday, my mind's gears today are already set appropriately to begin the session. One player did not show up—a casualty? We certainly hope not. Once again, we began with movies, this time three simultaneously—one of two lesbians in action, one of two male homosexuals in action, and one of a man 'pleasuring' a woman. The striking thing about these movies was the fact that they were *real* people, not actors, and their unmistakable affection somehow added a quite unexpected charm and acceptability to the movies. Could this have been resensitization happening? Seeing beyond the outward actions? Seeing the forest in all the trees?

We discussed our reactions, once again, and then watched yet another flick—a 'sexological examination' conducted by a sex therapist with a man and woman, mutual 'significant others', I presume. It was a film for therapists, and possibly for patients as well, aimed at *showing* patients how they might improve a sexual relationship by simply *knowing* about their partner's body, likes and dislikes. (It has been sneeringly called 'fornication therapy'). A roadmap in the pursuit of today's Holy Grail, it was designed to enhance sexual pleasure, and thus, probably of use only to the already eufunctioning individual, as opposed to the dysfunctioning sector.

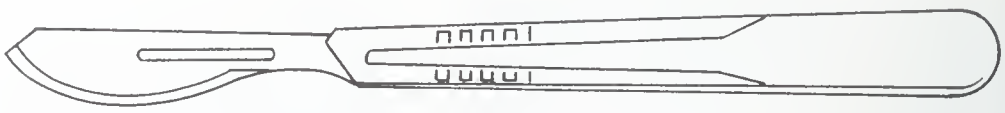


Perhaps the most troubling question, for me at least, arose during some subsequent role playing. A very common attitude floating around these days is that people are *free* to choose their own lifestyle, and sexual mode, and that no one sexual mode can or should be judged and evaluated as better than another. It is wrong to say that X is *better* than Y; only *different*, that's okay. A judgmental approach to a patient's sexual behavior and preferences is to be avoided. Being judgmental in this respect is being unprofessional.

Now it seems to me that this glorification of the 'do-your-own-thing-as-long-as-it-doesn't-hurt-anybody' ethic is a rather flip disregard of the real world. All this highminded talk about being non-judgmental in dealing with patients, in dealing with anyone for that matter, is a lot of nonsense. It is impossible to 'escape' your psychological set. You cannot negate your past—you *are* everything your past is. You adopt a certain lifestyle, and sexual mode, because you think it is 'right and good', ultimately. (*Why* you think, consciously or unconsciously, it is 'right and good'is a problem for behaviorists and philosophers). Still, there *is* a subjective value judgment inherent in this choice. So, when a patient says, "Doctor, what *should* I do?", you can *only* advise your patient to do what *you* believe is the 'right and good' thing to do. Granted, you can tell him/her what he/she *can* do and what he/she *should* do—and these are often two distinct things.

And so, while I expected the SAR session to help me to resolve this problem, it only sharpened its edges and crystallized it. My attitudes are unchanged. Perhaps my knowledge is up a bit. It may be easier to talk about such things, and thus to face them, to accept other possible modes, but there *is* a limit. Dealings with people can be on an objective level and subjective level. Doctors have been advised to stay on the objective—but this can be carried much too far. On an objective level I can say, "Sure, sado-masochistic sexual gratification is OK between consenting adults. Or, "If incest is your bag, go ahead." But subjectively, I shout "NO" to both. The problem is—*should* doctors ignore their own gut reactions in dealing with people? How objective, how subjective? I don't know. The SAR left me with an acute awareness of yet something else I don't know. ■

blunt dissection



Cigarette smokers should be taxed to pay for all the health and research efforts their habit generates.

Pro:

Cigarette smoking is one of the major causes of unnecessary health expenditure in Canada and throughout most of the world. Together with alcohol and overeating, it forms the triad responsible for most preventable illness and death in Western society.

While personal freedom is an almost unassailable concept in a democracy, any society depends upon the curtailment of certain individual freedoms, in order to protect the rights of other individuals and society in general. While a smoker can claim that it is his personal choice to commit slow suicide by smoking, he also inflicts second-hand smoke on the non-smoker. To add insult to injury, in these days of government health insurance programs, the non-smoker is forced to pay the cost when the smoker discovers that he didn't really mean to commit suicide and asks the health profession to cure him of cigarette-related diseases.

There are many ways of tackling the problem, of course, other than by taxation. Public Health education has managed to reduce smoking to some degree, and a concerted anti-smoking campaign might do more in this regard. Non-smokers rights organizations are beginning to get across the idea that non-smokers have the right not to inhale second-hand smoke. Many public places now enable non-smokers to eat, watch movies and study without streaming eyes, headaches or general irritation due to cigarette smoking. However, none of this really brings home to the smoker that his habit does more than kill him and irritate non-smokers.

Everyone is paying for lost work due to bronchitis and emphysema, for the hospital costs due to lung cancer and undersized babies, and for the costs of the multitude of complaints, such as stomach ulcers and heart attacks, which are less directly related to smoking, but which smoking exacerbates, if it is not part of the etiology of the ailment.

While taxing cigarettes, like taxing alcohol and lotteries, places an additional burden on the addicted, who are frequently poor and who may be supporting their habit at the expense of food and other necessities, and who tend to satisfy their habit regardless of the expense, the psychological impact of such a tax, clearly advertised as paying for part of the health costs of smoking would probably reduce smoking. For instance, a notice could be put on cigarette packages to the effect that "10¢ of the price of this packet

Con:

You've got to be kidding! This is a frightening proposal indeed—even in jest! If not in jest, all the more frightening still. How could anyone not hear the echoes of Huxley's *Brave New World* and Orwell's *1984* in this proposal? How could anyone hear and not be frightened? I suppose the senses of virulent anti-smokers may become clouded at times in their fervor. But surely, when they call for measures such as stated above, they know not what they do.

This, of course, is assuming that most people love freedom and hold personal liberty ultimately higher than some nebulous, inconstant, and condescending definition of the public weal. I may be assuming too much . . . and sometimes I do wonder when I see people so easily abrogate their right and duty to be responsible for themselves, when I see our modern failure of the nerve revive the herd ethos and culminate in our bovine submission to womb-to-womb protectionism by the powers-that-be. Big Brother is replete with kindly measures to save people from themselves: raise the drinking age, mandatory use of seatbelts, lower speed limits, outlaw guns, suicide prevention centers, to name but a few of the more overt measures aimed at some ill-defined common good. When it comes to cigarette smoking, anti-smoking campaigns by the government and voluntary health organizations have been largely futile. Bans on television advertising and ominous warnings on cigarette packages have had no effect whatsoever on the prevalence of smoking. Despite all the well publicized evidence linking it with lung cancer, heart disease, and respiratory ailments, smoking rises steadily. Government is now using the same Madison Avenue techniques that work so well *selling* cigarettes to *damn* them. Outright banning of butts would obviously be most effective, but is thankfully still unthinkable here (unlike Russia, where Vilnius, capital of Lithuania, has recently proclaimed itself the first 'no-smoking city'). So, anti-smokers, realizing that government shells out large and ever-growing expenditures in heroic, episodic, and ultimately impotent medicine in treating the sequelae of smoking, have decided that smokers hell bent on self-destruction should fund themselves from beginning to long, protracted, painful end. In a true Loyalist tradition even George III would be proud of, TAXES, my friend, TAXES are held out to be the answer.

This logic is blind to the consequences of such a move. Government has usurped too much power over our lives al-

Pro: *(continued)*

of cigarettes is assigned to pay for the costs of lung cancer, heart disease . . . and other diseases related to smoking. It is calculated that this revenue will pay x% of the health costs related to smoking." If nothing else this might alert non-smokers to the fact that they are being taxed to pay for the effects of somebody else's bad habit, and might well make smoking completely socially unacceptable.

The government is fully aware of the fact that most of the cost of running the health care system is due to alcohol, smoking and over-eating. While the latter is obviously not accessible to taxation (except possibly candy and soft drinks) both alcohol and smoking could easily be taxed. The point is that the government taxes both now, but is dependent upon that revenue to support programs that are not related to smoking or alcoholism. By transferring some of that tax revenue to the health care system, and by imposing an additional tax, as smoking declined and tax revenues declined, hopefully the need for those revenues would also decline. Thus the government would have greater incentive to launch an effective campaign against smoking, instead of maintaining their current ambivalent attitude.

As is well known, most people only respond when their pocket books are attacked. If an increase in the price of coffee due to a shortage can cause a sudden interest in the dangers of caffeine addiction, and a decline in coffee consumption, surely a health-related increase in cigarette prices, clearly advertised as such, would have the same effect.

Anne R. Crowe 7T9

Con: *(continued)*

ready. It reminds me of the deranged computer in **2001: A Space Odyssey**—a marvelous friend to man, its creator, in its intended role, but a self-serving menace to man once it reverses the original master-servant relationship. Levying taxes on smokers is, in effect, imposing punishment for a certain behavior. The choice of which behavior to punish is really quite arbitrary and the limit to such choice is not foreseeable. I'm not pushing cigarettes per se, only the absolute inviolable *right* to smoke, the freedom to dictate one's own life, and yes, death. To voluntarily hand over this right, this freedom, is surely suicide of a sort. . . . as I said, you've got to be kidding!

Susan Dickinson Ross 7T9

Future topics of Blunt dissection:

Are 'gifts' from drug companies bribes?

Putting doctors on salary will result in better health care for the average Canadian.

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Chronic osteomyelitis treated with hyperbaric oxygen: a case report

Robert Veselis 7T9

Chronic osteomyelitis is a chronic bone infection which is rather difficult to control. It starts as an acute infection which is refractory to treatment, or which is poorly or inadequately treated. Often it occurs in one of the long bones [1,2,3]. When this disease occurs in children, it is usually a result of hematogenous seeding. Often the metaphysis is the first to be involved because of its special blood supply. In very young children, or in adults, the disease can spread to the juxta-articular area. In adults the disease is usually associated with direct trauma, exposing the bone to infection, or with seeding from a nearby locus of infection [1,3,4,5].

If the acute disease is not adequately controlled then small groups of infective organisms can persist in granulation tissue surrounding a necrotic area of bone. The most common infective organism is staphylococcus, though the frequency of its occurence in chronic osteomyelitis has been decreasing since the advent of antibiotics [1,3,4]. The infected area is walled off by the bone with fibrous tissue, and is called a Brodie's abscess, and indicates a subacute form of the disease[3]. If these abscesses are small, they can be revascularized, and subsequently disappear. If, however, they are too large for revascularization, they persist and can later flare-up, causing spread of the infection not only to bone, but to surrounding soft tissue as well, resulting in a general toxemia or bacteremia. Areas of dead bone are called sequestra. Both Brodie's abscesses and sequestra appear on X-ray as radio-lucent areas. The bone in response to these insults lays down new, denser bone which appears on X-ray as a more radio-opaque area (called an involucrum). Openings through this new bone can occur (called cloacae), which allow the pus to escape to the surface through sinuses in the skin and soft tissue[5].

Treatment of acute osteomyelitis involves basically prompt, thorough, and aggressive antibiotic therapy[6]. Even so, about 20% of acute cases go on to the chronic form[3]. In chronic osteomyelitis treatment is much more complicated and less successful due to the refractoriness of the infection to antibiotics. The principles of treatment involve wide exposure, removal of necrotic bone and tissue (debridement and saucerisation), protecting the bone from fracture (immobilization), antibiotic therapy[3,4,6], and adjunctive measures such as a good wound care and dressing, skin grafting[7], and hyperbaric oxygen therapy[8,9,10].

On July 9, 1976, S.W., a 33 year old male North American Indian, was admitted to the Emergency department of Toronto General Hospital (TGH), with a flare-up of his chronic osteomyelitis. He had had a multiple vehicle accident in 1959, in which he suffered a compound open fracture of the left femur, as well as fracturing the left hand and pelvis, and rupturing the bladder. The left femur was treated with an open reduction and plating. Subsequently it became infected, which resulted in osteomyelitis. In the past 17 years he has had nine admissions to hospital for treatment of this condition, and the plate was removed in 1971.

In April 1976 he was admitted to TGH, and was treated with antibiotics intravenously. Subsequently he was maintained on oral cephalexin. In the two days previous to his present admission he had marked increase in pain in his left anterior and lateral thigh, and his old scar had become swollen. There were small sinuses draining small amounts of dark brown thick material. He had had intermittent fever and chills in the past 24 hrs. In the past two weeks he had been feeling unwell, had a runny nose, headaches, and a cough producing a thick yellow sputum. His physical examination revealed a mild pyrexia, and a mild decrease in percussion and auscultation in the posterior base of his right lung. A firm mass in his left leg near his old incision was noted with no surrounding erythema. It measured 10 × 7 cm, and was very painful. It appeared to be fluctuant. There were non-draining sinuses near the proximal end of the mass, and were sealed off with clotted blood. There was partial paresthesia anterior and inferior to the mass. An X-ray of his left thigh revealed a typical osteomyelitic lesion.

His past history was unremarkable except for his heavy smoking.

Cultures from his past admissions seemed to indicate that *Staphylococcus aureus* was the causative organism of the infection. Recently he had been treated with cloxacillin, but because of

mild allergic reactions he was changed to a regimen of intravenous and oral cephalothin and cephalexin.

Cultures from his admission of July 9, 1976 revealed Gram positive bacilli with non-terminal spores, many pus cells, and Gram negative coliforms (*E. coli?*). There was a question as to whether *Cl. welchii* was present, but because of the absence of crepitus at the wound, and no systemic reactions, this possibility was rendered unlikely. He had a white blood cell count of 9300, a normal hemoglobin, and an elevated eosinophil count of 14%. A drain was put into place, and he was started on intravenous cephalothin. A moderate amount of yellow-green pus was able to be expressed, and was not particularly foul in odour. By 12 July, he was well controlled with no fever, no systemic signs of infection, but still with a great deal of pain.

At this point in time the patient was depressed, frustrated, discouraged about his condition, and wanted an amputation. The psychologist determined that S.W. felt a fair degree of apprehension and ambivalence towards this wish, and would probably not adjust very well to amputation. The patient was pessimistic about the outcome of the disease, but was pleasant and co-operative with the staff.

On 16 July cephalothin was stopped, and it was decided that the best course of treatment would be wide debridement of bone and the sequestrum followed by a bone graft. If this course failed or the femur was fractured during manipulation it was decided to amputate the leg.

Appearance of leg before hyperbaric oxygen therapy

On 19 July cephalothin was restarted, and would continue during surgery and four weeks postoperatively. On 20 July an operation called saucerisation was performed. In saucerisation the bone and tissues and sequestrum are scooped out forming a saucer shaped depression over which granulation tissue can form. The bone removed revealed the pathology of chronic infection with fibrosis. There were no pockets of pus.

Over the next three months the patient had an unstable history as far as temperature, wound healing, and mental attitude were concerned. There was a great deal of difficulty in setting up intravenous lines in this patient, and at one point an infection with concomitant phlebitis occurred at a needle puncture site.

In these three months there were seven operations, including the initial saucerisation, five debridements, and one skin graft. By Oct. 17 there was no good response, the infection was spreading proximally along the large thigh muscles (there is very poor prognosis for anaerobic trunk infections), and various cultures in the last three months had shown *Clostridia, Bacteroides, Enterococci, Staphylococcus, Enterobacter, coliforms, Klebsiella,* at one point or another either in the wound or in the blood. There was a continuing elevation of the eosinophil count (from 15-20%), indicating an allergic reaction, either to the antibiotics or to some exogenous factor such as hay fever. (Cephalothin was replaced with gentamicin for a time, but this made no difference.) The skin graft which had been placed on 22 Sept. was starting to slough. All through this the patient was basically pessimistic about the outcome, and was wishing for an amputation, as this possibility had been explained to him on a previous admission.

Appearance of leg after hyperbaric oxygen therapy and before amputation.

As a final attempt to save the leg, hyperbaric oxygen therapy was instituted. He was pressurized to 2.75 atmospheres absolute (ATA), and each treatment lasted 115 minutes. He intermittently breathed oxygen for a total of 83 minutes, and air for the remainder of the time. He had a total of 36 successive (two per day) treatments. A small improvement in his condition resulted but this improvement was not sufficient to warrant continuation of

the treatment. On 11 Nov., 1976 his leg was disarticulated at the hip. Later on (Jan., 1977) he was readmitted with an infected stump.

This case serves to illustrate several points. Probably the most obvious one is that a cure for chronic osteomyelitis is very difficult to obtain. The cure must be instituted, and be successful, in the acute phase. Chronically, the disease can be controlled, but acute flare-ups are to be expected; if these get out of hand, or an external stress is introduced (such as fracture of the limb), then the prognosis is poor.

Another point is the mental state of the patient with chronic osteomyelitis. Even when the infection is controlled, the limb naturally has impaired function, and there is often chronic pain. The pain becomes very severe in acute flare-ups, and therefore it is quite reasonable to expect a pessimistic attitude in the patient. This may make therapy even more difficult.

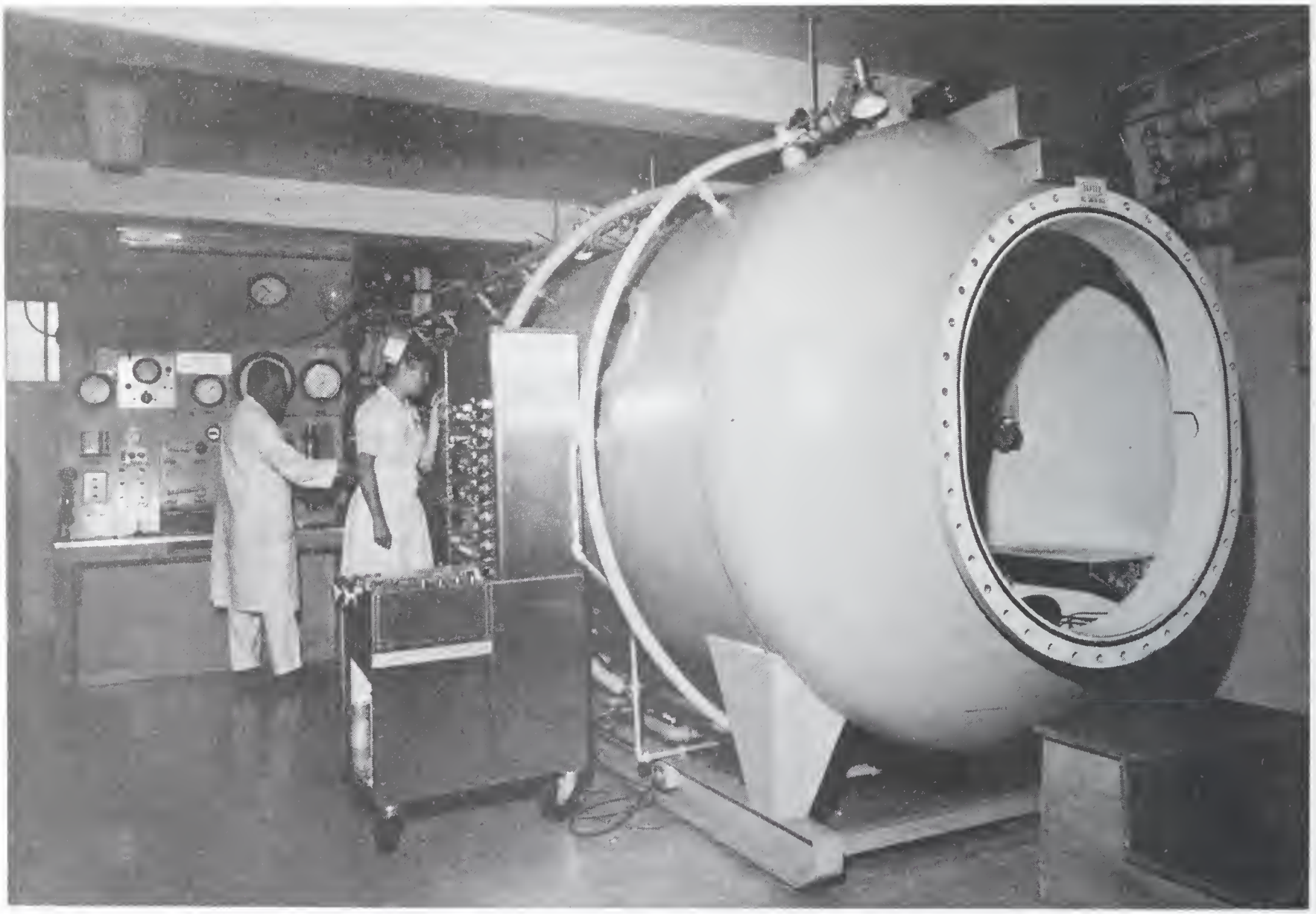
Finally I would like to comment upon hyperbaric oxygen therapy. There have been numerous studies on the treatment of chronic osteomyelitis with oxygen under high pressure (OHP)[8],[9],[10]. There is no doubt that OHP has a beneficial effect (up to 75% 'excellent' results[8]), and in cases where the chronic osteomyelitis was of short duration the success rate was very good. In chronic cases successful treatment is much harder to obtain.

Why is OHP therapy beneficial? Various theories have been proposed. OHP above 1.3 ATA is bacteriostatic for aerobic organisms. But below this tension oxygen can enhance the growth of these organisms[12]. It may be difficult to obtain this oxygen tension in the depths of the wound because of diffusion barriers and poor vascularization of the area. OHP may be bactericidal to anaerobic organisms[11]. Since most of the infective organisms in chronic osteomyelitis are aerobic, it is unlikely that OHP is of much benefit by a direct action upon the organisms. OHP may enhance the efficiency of the body's own defence mechanisms in the area of the wound, by supplying oxygen to phagocytic cells. But this is also unlikely to contribute significantly to a beneficial effect since OHP therapy usually occupies only three hours out of a 24 hour day. The most likely mechanism for combating the infection is enhanced wound healing, by stimulation of fibroblastic activity and neovascularization[12].

To be beneficial OHP should be administered frequently, and continued for at least one month's duration. The limiting factor of OHP therapy is oxygen toxicity. At high pressures of oxygen the human body will eventually (within minutes to hours) manifest symptoms of oxygen toxicity which may include neurological disturbances (including epileptiform seizures), nausea and vomiting. Oxygen toxicity becomes more likely as the pressure of oxygen is increased, and as the duration of exposure is increased. Therefore the usual maximum 'dose' of oxygen that is administered is 100% oxygen at 2.75 ATA for 30 minutes. For longer treatment with oxygen at increased pressure, breaks of air are given between oxygen treatments.

In this case the patient breathed pure oxygen for never longer than 30 minutes, but during each treatment, which lasted about 115 minutes, oxygen was continually fed into a bag which covered the wound area. This delivered high oxygen tensions to this surface of the wound, and to a depth of 2 mm into the wound.

(cont. pg. 60)



Hyperbaric Chamber at TGH

ELECTIVE CIRCUS

Summer Employment: Mount Logan Expedition

In the summer of 1975 I had the privilege of being a member of the Mount Logan Expedition—High Altitude Physiological Study (HAPS) sponsored by the Arctic Institute of North America. Mount Logan is Canada's highest mountain and is situated in the St. Elias Mountains of the Yukon Territory. For the last few years, the HAPS programme has been actively investigating man's adaption to high terrestrial altitudes and especially the mechanisms of production of Acute Mountain Sickness, which can afflict the unacclimatized mountaineer and rapidly transform him into a serious medical casualty.

My role was to act both as a subject for the physiological trials and as a technician to do blood gases, measure O_2 saturation and other respiratory parameters. Baseline studies were carried out in the Cardiopulmonary Laboratory of McMaster University Medical Center and, during a week of rigorous testing, our exercise tolerance and cardio-pulmonary status were determined. Sleep EEG studies with simultaneous blood sampling were also included in the protocol.

By military transport we were airlifted to our base camp on the Alaska Highway for further studies and from there we were flown into the 'land of enchantment', the St. Elias Mountains. Unfortunately due to two plane malfunctions and repeated blizzards, our project fell behind schedule badly and I did not manage to reach the peak of Mt. Logan, instead 'camping' 20 miles away at our intermediate camp at 10,000 ft. elevation directly across from Mt. Logan. The site allowed several short mountain climbing expeditions to many unnamed peaks that will never appear on a map.

Thus, while our scientific yield was rather meagre (which was made up on the 1976 expedition), I managed to learn much about exercise physiology, mountain medicine, as well as mountaineering. A programme of seminars held by the many fine scientists from different parts of the U.S. and Canada helped make this a memorable and exciting learning experience for all of us.

Karl H. Maret 7T7

Book Review

Two hundred years ago, the Americans were fighting for their new country; the Bastille had another twelve years of life; and anyone seen trotting aimlessly through the laneways of the settlement at the mouth of the Humber would have been thought ridiculous, if not lunatic. 'Exercise' as we know it today did not exist. Most people used the metabolic energy of their bodies to do work, and those with 'inactive' jobs walked, climbed stairs, carried loads of wood or potatoes as part of their daily routine. Heart attack was not unknown but was one of the lesser perils of life.

As machines did more work, provided more transportation and generally made a 'better life', the incidence of heart disease grew—slowly, imperceptibly at first, but inexorably until today heart attack is the greatest killer in the western world. For thousands, if not millions, of years mankind had held atherogenesis in balance with an appropriate, if unplanned, mix of diet, lifestyle and activity. Atherogenesis presumably has changed little in the past two hundred years but now it rages unchecked. The person seen trotting through Toronto's streets today may still be thought ridiculous, but certainly not mad.

Terry Kavanagh, Medical Director of the Toronto Rehabilitation Centre, has written **Heart Attack? Counter-attack!,** "primarily for the intelligent layman who would like to explore the fascinating fields of endurance exercise and rehabilitation medicine," and for the intelligent layman who wants to improve his chances of living beyond the age of fifty! Dr. Kavanagh begins by presenting a lucid analysis of the problem in terms of basic cardiology and exercise physiology. He has successfully found the path between the emptiness of generality and the mire of detail, but though the text reads smoothly, he has some discomforting things to say. "Endurance fitness cannot be stored. You must work zealously to maintain it, otherwise it will deteriorate inexorably . . ." and so will your health. For all too many people, 'getting into shape', with its implicit admission that you're 'out of shape', means a brief frenetic period of activity which occurs when you find that you can't get into last summer's clothes or when a friend suffers a heart attack. It just won't do. Getting into shape is merely the prelude to staying in shape, which means, for Dr. Kavanagh's 'cardiacs', staying on an exercise program for "the rest of their lives".

The book goes on to describe the post-coronary rehab program that Dr. Kavanagh directs at the Toronto Rehabilitation Centre. The program is centred on the development of endurance fitness through slow, long distance jogging with appropriate doses of ancillary dietary and psychological therapy. The book explains precisely what to do and what to avoid in beginning a jogging program and Dr. Kavanagh has utilized his considerable knowledge of the often harsh realities of running to anticipate difficulties and to suggest practical solutions. This is the part of the book written by 'Coach' Kavanagh. His 'cardiacs' begin with walking or jogging for half an hour, five times a week, and within weeks, they are walking/jogging for an hour each time. The exercise plan, though demanding, is tailored to each individual's cardiac status as revealed by rigorous tests and continual evaluation. But Doctor/Coach Kavanagh is determined in his assault on his patients' unfitness. He tells them, "We offer hard facts, hard work, and hardline direction. In return, you get a second chance at life, and an opportunity to live it in a high state of physical fitness. But remember, your new lifestyle can only be maintained by constant effort. You can't build up a store of exercise or fitness that can be used over later months or years of sedentary living. Deterioration sets in within weeks of stopping training. So if you can't hack it, then don't bother starting. Exercise must become an integral part of your daily routine. The only way out is to obtain the letters R.I.P. after your name, and we don't intend to be handing out too many of those types of diplomas!"

The success of Dr. Kavanagh's rehab program can be shown statistically, but it is also told in the lives of individual men and women who have gained a new hold on life. One remarkable group of his patients have achieved tangible evidence of their endurance fitness and symbolic victory for their new lives—they have run and completed the famous Boston Marathon, twenty-six miles, three hundred and eighty-five yards of effort, sweat, and joy.

Heart Attack? Counter-attack! contains much information for the 'intelligent layman'. It is instructive, informative and practical. But Terry Kavanagh knows that good medicine requires more than information and instruction so his book (and his rehabilitation program) dispenses enthusiasm, encouragement and inspiration as well. The intelligent layman will want to read it. So will the intelligent doctor.

David Arnold 7T9

Heart Attack? Counterattack!
A Practical Plan for a Healthy Heart
by
Terence Kavanagh M.D.
Van Nostrand Reinhold Ltd. 1976
232 pages.

FEEDBACK

The Editor's Headache

Getting out this publication is no picnic. If we print jokes, people say we are silly. If we don't, they say we are too serious. If we stick close to the office all day, we ought to be around hunting material. If we get out and try to hustle, we ought to be on the job in the office. If we don't print contributions, we don't appreciate genius. And if we do print them, the paper is full of junk! If we edit the other fellow's stuff, we're too critical. If we don't, we're asleep. If we clip things from other magazines, we are too lazy to write them ourselves.

Now, like as not, some guy will say we copied this from some magazine. We did.